National Institute of Environmental Health Sciences

Keeping wetlands wet in the western United States: Adaptations to drought in agriculture-dominated human-natural systems

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Abstract:

Water is critical to protecting wetlands in arid regions, especially in agriculture-dominated watersheds. This comparative case study analyzes three federal wildlife refuges in the Bear River Basin of the U.S. West where refuge managers secured water supplies by adapting to their local environmental context and their refuge's relationship to agriculture in being either irrigation-dependent, reservoir-adjacent or diked-delta wetlands. We found that each refuge's position confers different opportunities for securing a water supply and entails unique management challenges linked to agricultural water uses. Acquiring contextually-appropriate water rights portfolios was important for protecting these arid region wetlands and was accomplished through various strategies. Once acquired, water is managed to buffer wetlands against fluctuations caused by a dynamic climate and agricultural demands, especially during droughts. Management plans are responsive to needs of neighboring water users and values of the public at large. Such context-specific adaptations will be critical as the West faces climate change and population growth that threaten wetlands and agricultural systems to which they are linked.

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Resource Description

Exposure : ☑

weather or climate related pathway by which climate change affects health

Ecosystem Changes, Extreme Weather Event, Food/Water Security, Food/Water Security

Extreme Weather Event: Drought

Food/Water Security: Agricultural Productivity

Geographic Feature: ☑

resource focuses on specific type of geography

Desert, Freshwater, Other Geographical Feature

Other Geographical Feature : wetlands;

Geographic Location: ☑

resource focuses on specific location

United States

Health Impact:

specification of health effect or disease related to climate change exposure

Health Outcome Unspecified

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation

Resource Type:

format or standard characteristic of resource

Review

Resilience:

capacity of an individual, community, or institution to dynamically and effectively respond or adapt to shifting climate impact circumstances while continuing to function

A focus of content

Timescale:

time period studied

Time Scale Unspecified